The Arkansas Department of Health Healthcare-Associated Infections Report

2013

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Abbreviations

ADH	Arkansas Department of Health
AFMC	Arkansas Foundation for Medical Care
AHA	Arkansas Hospital Association
APIC	Association of Professionals in Infection Control and Epidemiology
ARRA	American Reinvestment and Recovery Act
BSI	Bloodstream infection
CAUTI	Catheter-associated urinary tract infection
CBIC	Certification Board of Infection Control and Epidemiology
CDC	Centers for Disease Control and Prevention
CDI	*Clostridium difficile* infection
CLABSI	Central line-associated blood stream infection
CMS	Centers for Medicare and Medicaid Services
ELC	Epidemiology and Laboratory Capacity
ESRD	End Stage Renal Disease
HAI	Healthcare-associated infection
HCW	Healthcare worker
HEN	Hospital engagement network
HHS	Department of Health and Human Services
ICU	Intensive care unit
IP	Infection preventionist
LABID	Laboratory identified
LTAC	Long term acute care hospitals
MRSA	Methicillin-resistant *Staphylococcus aureus*
NHSN	National Healthcare Safety Network
SCIP	Surgical Care Improvement Project
SIR	Standardized infection ratio
SSI	Surgical site infection
QAPI	Quality Assessment and Performance Improvement
UTI	Urinary tract infection

Executive Summary

Healthcare-associated infections (HAI) are infections caused by a wide variety of common and unusual bacteria, fungi, and viruses that develop during the course of receiving medical care. Medical advances have brought lifesaving care to patients in need, yet many of those advances come with a risk of HAI, which can be devastating and even deadly. They have been recognized by the Centers for Disease Control and Prevention (CDC) as a top "winnable battle" in public health and as a priority for improving the quality of healthcare and patient safety.

Currently, the HAI program monitors central line-associated blood stream infections (CLABSI), catheter-associated urinary tract infections (CAUTI), surgical site infections (SSI), laboratory identified (LabID) Methycillin-resistant *Staphylococcus aureus* (MRSA) infections, LabID *Clostridium difficile* infections (CDI), and healthcare worker influenza vaccination status in accordance with the Center for Medicare and Medicaid Services Inpatient Quality Reporting program. Sixty-three healthcare facilities in Arkansas have given the Arkansas Department of Health (ADH) access to their data. Of these facilities, forty-six are acute care hospitals and are required by legislation to report.

The following is a summary of the key findings presented in this report:

Efforts to reduce CLABSIs in Arkansas appear to have been successful. The 2012 statewide aggregate standardized infection ratio (SIR) of 0.53 did not meet the 2013 national target ratio of 0.50, but still represents a significant reduction in CLABSIs from previous levels.

Arkansas's 2012 CAUTI SIR of 1.18 is higher than the national level of 1.00 and the national target of 0.75. However, the last quarter showed a reduction in CAUTIs that was better than expected indicating that the statewide prevention efforts may be making an impact. The HAI program will continue to monitor this HAI closely and make efforts to further encourage progress.

Arkansas's 2012 SSI SIR for colon surgeries was 0.92 and for abdominal hysterectomies was 0.93. Both continue to be close to the national baseline of 1.00. During 2013, a reduction of HAI rates has been seen with both surgery types but will need to be evaluated for an entire year to see if this is a true reduction due to the small number of infections reported.

There have not been enough data collected for the LabID portion of the HAI measures to draw any definitive conclusions. For the 1st half of 2013, LabID MRSA had a SIR of 1.34, which is significantly higher than what is expected. LabID CDI had a SIR for the first half of 2013 that was 0.72 and comes close to meeting the national target for this measure of 0.70. However, as more data becomes available throughout 2013, the program will be better equipped to evaluate the state's progress in this area.

For the first time, health care worker influenza vaccination status has been collected for the 2012-2013 influenza season. Seventy-five percent of Arkansas health care workers were vaccinated which is slightly higher than CDC estimates of 72% of health care workers nationally.[1]

The Arkansas Healthcare-Associated Infections Advisory Committee remains committed to guiding data collection, preventing healthcare-associated infections, and reporting findings to the public. Arkansas healthcare facilities have demonstrated a commitment to patient safety within their facilities and have also collaborated to share best practices for surveillance and prevention of healthcare-associated infections. This report includes findings from mandated data from January 2011 through June 2013.

Introduction

HAIs are leading causes of death in the United States and account for an estimated 1.7 million infections and 99,000 associated deaths each year.[2] One source estimates that the direct hospital costs for HAIs are between $35.7 billion and $45 billion annually after adjusting to 2007 dollars, or $25,903 per HAI.[3]

The first iteration of this HAI report was submitted to the legislature during March 2013. The following document is the 2nd iteration and provides a yearly update on surveillance (tracking disease) and a brief cost analysis of HAI metrics in Arkansas. Public health work incorporates surveillance and prevention activities (including patient education and improving quality of healthcare) to improve health. This report addresses these elements by informing the public about HAIs in general; the progress of healthcare systems in preventing HAIs; and the financial burden that HAIs can place on these systems.

The ADH supplies technical support and training to the healthcare facilities that are reporting HAIs into the National Healthcare Safety Network (NHSN) in an effort to improve the accuracy of data and ensure that each Arkansas facility obtains their yearly reimbursement from CMS. Thus far, 100% of mandated Arkansas facilities have submitted data prior to each deadline. The state's HAI data have been collected and analyzed through June of 2013.

The ADH HAI Program is publicly reporting Arkansas's aggregate HAI data on the ADH HAI webpage, http://www.healthy.arkansas.gov/programsServices/epidemiology/Pages/HAI.aspx, in a manner intended to be understandable and useful for the public. The data on this website are updated quarterly and are readily available as a source of HAI information. Specific hospital infection rates can be found at CMS' Hospital Compare website, http://www.medicare.gov/hospitalcompare/search.html.

Information on the history and prevention of HAIs can be found for the national level in Appendix A and for Arkansas in Appendix B. Additionally, information on the HAI prevention work that is being done in Arkansas by the End Stage Renal Disease (ESRD) Network 13 and APIC Chapter 46 can be found in Appendix C and D, respectively.

Arkansas Healthcare-Associated Infection Surveillance Results

The Standardized Infection Ratio (SIR) is used to compare how the rates of infection among hospitals in our state compare to a national standard. The ratio compares the reported number of infections in our state (the "observed" number of infections) to the national rate (the "predicted" number of infections).

The "observed" number is the total number of infections that were reported in the different clinical unit types in the state. The "predicted" number is the number of infections that would have occurred if the state's performance had been the same as the national baseline experience. Table 1 gives guidance on the interpretation of SIRs.

Table 1: SIR Interpretation

If the SIR:	It means that:
Equals 1	The state had infections at the same rate as would be predicted from national rates
Is higher than 1	The state had more infections than predicted from national rates
Is less than 1	The state had fewer infections than predicted

For example, a state with a SIR of 1.50 reported 50% more infections than would be predicted from national rates. One with a SIR of 0.70 reported 30% fewer infections than the national rates.

Central Line-Associated Bloodstream Infections (CLABSI)

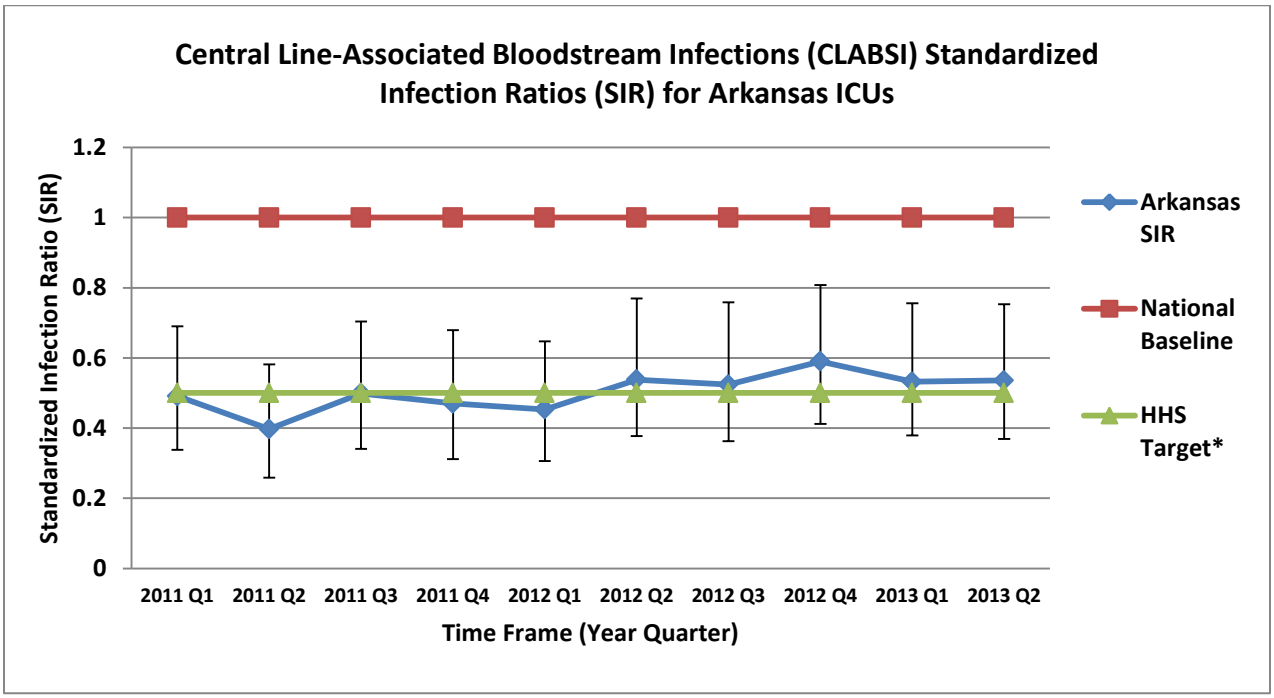
A "central line" or "central catheter" is a tube that is placed into a patient's large vein, usually in the neck, chest, arm, or groin. This includes peripherally inserted central catheters, PICC lines, as a type of central line. The catheter is often used to draw blood or give fluids or medications. It may be left in place for several weeks. A bloodstream infection can occur when bacteria or other germs travel down a "central line" and enter the blood. A patient who develops a CLABSI may become ill with fever and chills, or the skin around the catheter may become sore and red. Table 2 demonstrates how Arkansas hospitals have been performing with CLABSIs in comparison with the national baseline.

Table 2: Arkansas ICU CLABSI Data

	Time Period	SIR	Confidence Interval*	Interpretation
Arkansas	**2011**	**0.47**	**(0.39, 0.56)**	**54% fewer infections than the national experience**
	2012	**0.53**	**(0.44, 0.62)**	**47% fewer infections than the national experience**
	2013, Jan-June	**0.53**	**(0.41, 0.68)**	**47% fewer infections than the national experience**

*If the range listed for the confidence interval includes 1, there is no statistically significant difference between the state's rate and the nation's rate.

Figure 1, which depicts the state's ICU CLABSI SIR by quarter since January 2011. It shows that CLABSI SIRs have remained relatively consistent and right on track with the Department of Health and Human Services (HHS) target.



***2013 HHS prevention target for CLABSI is SIR of 0.50.**

Figure 1: Arkansas CLABSI SIR Time Trend, January 2011-June 2013

All HAIs result in increased cost to the healthcare system; therefore prevention of these infections results in healthcare savings. Extra costs associated with CLABSIs range from $7,288 to $29,156 per infection.[3] Table 3 shows the amount of saved or excess cost in 2012 due to CLABSIs in Arkansas utilizing three different scenarios. First is the amount spent in Arkansas based on the 2012 SIR, second is the amount saved compared to the amount that would have been spent if Arkansas was at the national baseline SIR of 1.00, and third is the excess cost spent in Arkansas as compared to the national prevention target SIR of 0.50. The table shows that Arkansas has saved healthcare costs because its CLABSI rates are below the national baseline.

Table 3: 2012 Arkansas ICU Healthcare cost, CLABSI

	Lower Estimate	Upper Estimate
Cost of CLABSIs in Arkansas (SIR = 0.53)	**$962,016**	**$3,848,592**
Costs saved compared to national baseline (SIR 0.53 vs. 1.00)	**$867,272**	**$3,469,564**
Excess costs compared to national HHS target (SIR 0.53 vs. 0.50)	**$47,372**	**$189,514**

Catheter-Associated Urinary Tract Infections (CAUTI)

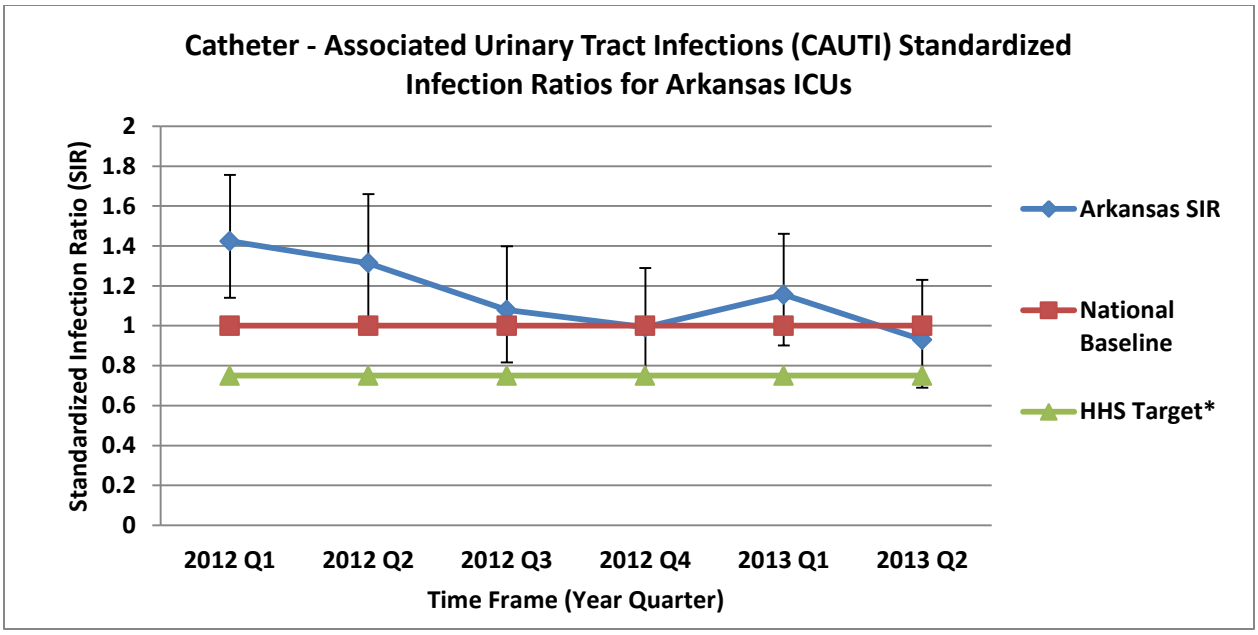
A urinary tract infection (also called "UTI") is an infection in the urinary system, which includes the bladder and the kidneys. Germs (for example, bacteria or yeasts) do not normally live in these areas, but if germs are introduced, an infection can occur. If a patient has a urinary catheter, germs can travel along the catheter and cause an infection in the bladder or kidney. In that case it is called a catheter-associated urinary tract infection (or CAUTI). Table 4 demonstrates how Arkansas hospitals have been performing with CAUTIs compared to the national baseline.

Table 4: Arkansas ICU CAUTI Data

	Time Period	SIR	Confidence Interval*	Interpretation
Arkansas	**2012**	**1.18**	**(1.04, 1.32)**	**18% more infections than the national experience**
	2013, Jan-June	**1.06**	**(0.87, 1.26)**	**No difference from the national experience**

*If the range listed for the confidence interval includes 1, there is no statistically significant difference between the state's rate and the nation's rate

Figure 2 which depicts the state's ICU CAUTI SIR by quarter since January 2012. The CAUTI SIR has been above the national comparison SIR of 1.00 for some time. Results from last quarter, while not statistically significant, began to show a downward trend that may be indicative of improvement in this area.



***2013 HHS prevention target for CAUTI is SIR of 0.75.**

Figure 2: Arkansas ICU CAUTI Time Trend, Jan 2012-June 2013

Extra costs associated with CAUTIs range from $862 to $1007 per infection.[3] Table 5 shows the amount of excess cost due to ICU CAUTIs in Arkansas utilizing three different scenarios. First is the amount spent in Arkansas based on the 2012 SIR, second is the excess cost spent on CAUTIs as compared to the national baseline SIR of 1.00, and third is the excess cost spent as compared to the national prevention target SIR of 0.75. The cost analysis demonstrates that CAUTIs are an area in which Arkansas hospitals can reduce healthcare costs by reducing the rate of infections to the national baseline or HHS target.

Table 5: 2012 Arkansas ICU Healthcare Cost, CAUTI

	Lower Estimate	Upper Estimate
Cost of CAUTIs in Arkansas (SIR = 1.18)	**$234,464**	**$273,904**
Excess costs compared to national baseline (SIR 1.18 vs. 1.00)	**$35,342**	**$41,287**
Excess costs compared to national target (SIR 1.18 vs. 0.75)	**$85,122**	**$99,441**

Surgical Site Infections (SSI)

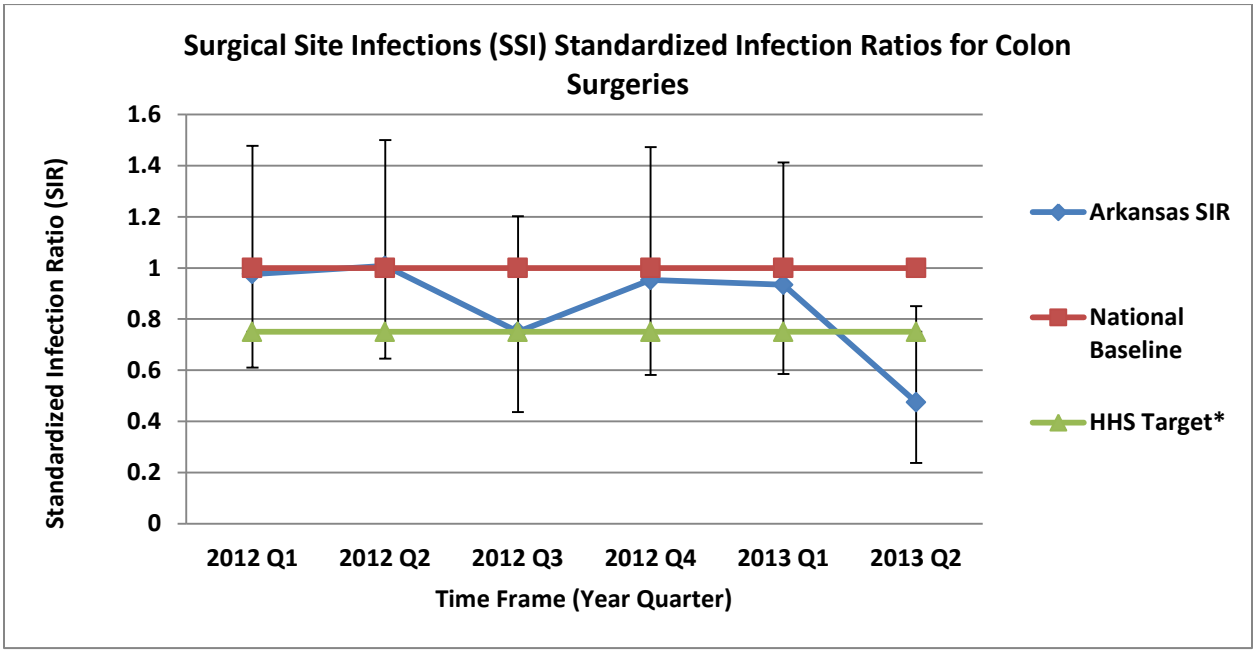
A SSI is an infection that occurs after surgery in the part of the body where the surgery took place. Most patients who have surgery do not develop an infection. However, infections develop in about 1 to 3 percent of surgery patients. Some of the common symptoms of a SSI include: redness and pain around the surgical site, drainage of cloudy fluid from the surgical wound, and fever. Arkansas hospitals report SSI data on two different surgical procedures, colon surgery and abdominal hysterectomy. Table 6 demonstrates how Arkansas hospitals have been performing with SSIs compared to the national baseline.

Table 6: Arkansas SSI Data

Procedure	Time Period	SIR	Confidence Interval*	Interpretation
Colon Surgery	**2012**	**0.92**	**(0.74, 1.14)**	**No difference from the national experience**
	2013, Jan-June	**0.71**	**(0.49, 0.99)**	**29% fewer infections than the national experience**
Abdominal Hysterectomy	**2012**	**0.93**	**(0.62, 1.35)**	**No difference from the national experience**
	2013, Jan-June	**0.79**	**(0.39, 1.41)**	**No difference from the national experience**

*If the range listed for the confidence interval includes 1, there is no statistically significant difference between the state's rate and the nation's rate

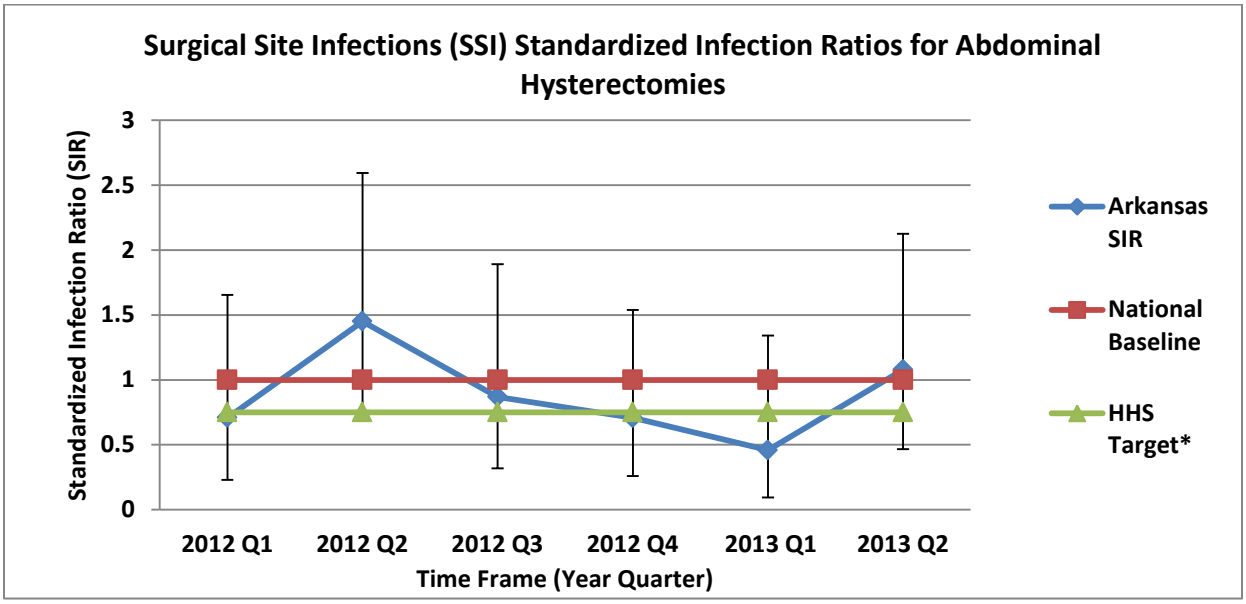
Figure 3 depicts the state's colon surgery SSI SIR by quarter since January 201



***2013 HHS prevention target for SSI is SIR of 0.75.**

Figure 3: Arkansas colon surgery SSI SIR Time Trend, Jan 2012-June 2013

Figure 4 depicts the state's abdominal hysterectomy SSI SIR by quarter since the beginning of the reporting period in January 2012.



***2013 HHS prevention target for CAUTI is SIR of 0.75.**

Figure 4: Arkansas abdominal hysterectomy SSI SIR Time Trend, Jan 2012-June 2013

Extra costs associated with SSI infections range from $11,874 to $34,670 per infection.[1] Table 7 shows the amount of saved or excess cost due to SSIs in Arkansas utilizing three different scenarios. First is the amount spent in Arkansas for each SSI measure based on the 2012 SIR, second is the amount saved compared to the amount that would have been spent if Arkansas was at the national baseline SIR of 1.00, and third is the excess cost in Arkansas as compared to the national prevention target SIR of 0.75. The cost analysis demonstrates that SSIs are an area in which Arkansas hospitals can reduce healthcare costs by reducing the rate of infections to the HHS target.

Table 7: 2012 Arkansas Healthcare Cost, SSI Colon Surgery (COLO)

	Lower Estimate	Upper Estimate
Cost of COLO SSIs in Arkansas (SIR = 0.92)	**$985,542**	**$2,877,610**
Costs saved compared national baseline (SIR 0.92 vs. 1.00)	**$83,118**	**$242,690**
Excess costs compared to national target (SIR 0.92 vs. 0.75)	**$184,047**	**$537,385**

Table 8: 2012 Arkansas Healthcare Cost, SSI Abdominal Hysterectomy (HYST)

	Lower Estimate	Upper Estimate
Cost of HYST SSIs in Arkansas (SIR = 0.93)	**$332,472**	**$970,760**
Costs saved compared to national baseline (SIR 0.93 vs. 1.00)	**$22,938**	**$69,340**
Excess costs compared to national target (SIR 0.93 vs. 0.75)	**$65,307**	**$190,685**

Laboratory-Identified (LabID) HAI metrics

Hospitals are required to report on two infections which are associated with healthcare transmission: Methycillin-resistant *Staphlyococcus aureus* (MRSA) bloodstream infections and *Clostridium difficile* infections (CDI). Both of these can lead to significant health consequences. The reporting method for these two HAI metrics is different from previously mentioned surveillance in that all positive cultures are submitted to NHSN, and the system determines whether the infection came from the community or developed during a hospital admission. Additionally, hospitals report data for all areas of the hospital not just the ICU. Table 8 demonstrates how acute care hospitals have been performing with healthcare onset LabID measures for MRSA and CDI.

Table 9: Arkansas LabID Data

Organism	Time Period	SIR	Confidence Interval*	Interpretation
MRSA	**2013, Jan-June**	**1.34**	**(1.02, 1.74)**	**34% more infections than the national experience**
CDI	**2013, Jan-June**	**0.72**	**(0.64, 0.80)**	**28% fewer infections than the national experience**

*If the range listed for the confidence interval includes 1, there is no statistically significant difference between the state's rate and the nation's rate

Specific cost analysis data is not available for healthcare-onset MRSA bloodstream infections at this time.

Extra costs associated with CDI infections range from $6,408 to $9,124 per infection.[3] Table 10 shows the amount of saved and excess costs due to LabID CDI in Arkansas utilizing three different scenarios. First is the amount spent in Arkansas based on the 2012 SIR, second is the amount saved compared to the amount that would have been spent if Arkansas was at the national baseline SIR of 1.00, and third is the excess cost spent in Arkansas as compared to the national prevention target SIR of 0.70. The table shows that Arkansas has saved healthcare costs because its LabID CDI rates are below the national baseline.

Table 10: 2013 (January-June) Healthcare Cost, CDI

	Lower Estimate	Upper Estimate
Cost of CDIs in Arkansas (SIR = 0.72)	**$2,018,520**	**$2,874,060**
Costs saved compared to national baseline (SIR 0.72 vs. 1.00)	**$801,000**	**$1,140,500**
Excess costs compared to national target (SIR 0.72 vs. 0.70)	**$44,856**	**$63,868**

Healthcare Worker Influenza Vaccination

Healthcare worker (HCW) influenza vaccination coverage is a new metric utilizing the NHSN Healthcare Worker Safety component. HCW influenza vaccination is important in reducing the transmission of influenza in the hospital setting but also to ensure a healthy workforce during influenza season. Table 11 demonstrates how Arkansas is doing with vaccinating health care workers for influenza.

Table 11: Arkansas HCW Influenza Vaccination Coverage

	# of vaccinated health care workers	# of health care workers	% of health care workers vaccinated
Influenza season 2012-2013	**59,657**	**79,514**	**75 %**

Cost analysis relating to HCW influenza vaccination coverage is not available at this time.

Limitations

The national data used for comparison in these analyses are the NHSN pooled means based on national 2006-2008 HAI data; whereas the Arkansas HAI data are from 2011-2013. This is a limitation because factors that have changed over time, such as improvements in HAI prevention and outcomes, may have also changed the national mean. Arkansas data submitted to NHSN have not been validated; therefore, we cannot guarantee consistent case finding and uniform application of accurate surveillance definitions.

With the current level of CDC funding, the HAI program is able to support one epidemiologist and one administrative specialist whose main tasks are to: 1) provide technical support for hospitals entering HAI data, 2) analyze these data, and 3) provide educational support for the prevention collaboratives in the state. However, federal funding is being reduced across all public health disciplines, and these reductions limit this program's capacity for expansion. If the HAI program were to receive additional funding, the program would work towards expansion in three areas: education, prevention, and validation. The

program would strive to expand educational programs for HCWs around the state to ensure that HCWs are well trained in infection prevention and data collection. The HAI program would be empowered to provide more resources to support infection prevention work throughout the state and enhance the work being done by stakeholders. Finally with additional funding, the HAI program would implement data validation initiatives to ensure that Arkansas data reported in NHSN represents an accurate picture of the HAIs occurring in the state.

Program Goals 2014

The ADH HAI program will continue current activities which include providing guidance and training to facilities submitting HAI data into NHSN, analyzing the state's data, and making this data available to the public and the HAI Advisory Committee. The program plans to assemble the HAI Advisory Committee quarterly so that data may be presented in a timely manner, areas of improvement can be identified, and acted upon. Additionally, the program will remain committed to providing tools and assistance to help reduce HAIs and improve patient safety. The ADH intends to collaborate with stakeholders to ensure cohesive and cost effective prevention efforts, and continue to participate in regular educational seminars throughout the state. As federal efforts, recommendations, and requirements expand the ADH HAI program will respond by incorporating the changes into the existing program.

References

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Appendix A

National HAI Background and Prevention Efforts

Background

HAIs are caused by a wide variety of common and unusual bacteria, fungi, and viruses encountered during the course of receiving medical care. These infectious agents can come from the patient themselves (for example, from the skin, nose, mouth, or gastrointestinal tract, where microorganisms are normally found) or from non-patient sources such as healthcare personnel, visitors, patient care equipment, medical devices, or the healthcare environment.

Medical advances have brought lifesaving care to patients in need, yet many of these advances come with a risk of HAI. HAIs are leading causes of death in the United States and account for an estimated 1.7 million infections and 99,000 associated deaths each year.[2] One source estimates that the direct hospital costs for HAIs are between $35.7 billion and $45 billion annually after adjusting to 2007 dollars, or $25,903 per HAI.[3] Public health surveillance is the ongoing, systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice and is closely integrated with the timely dissemination of these data to those responsible for prevention and control. Surveillance for HAI is conducted to monitor successes in HAI prevention and control.

Surveillance Efforts

With national focus on the importance of HAIs, surveillance is key to defining the magnitude of the problem, understanding trends, and monitoring progress in reducing and eliminating these infections. Significant progress is being made in the United States toward nationwide HAI surveillance through the cooperation of federal regulatory agencies, state health departments, healthcare stakeholders, and an informed and active public.

In 2010, the United States Department of Health and Human Services (HHS) Centers for Medicare and Medicaid Services (CMS) took a major step in recognizing the importance of surveillance and prevention of HAI for reduction of healthcare costs. They released a final rule (CMS 1498) July 30, 2010 under the Hospital Inpatient Prospective Payment Systems to provide financial incentives for HAI data submission to CMS. In order to earn full reimbursement for patient care, hospitals that care for Medicare patients are required to submit data on specific HAIs. CMS has released this information, and will release subsequent HAI information to consumers on the Hospital Compare website (http://hospitalcompare.hhs.gov/) and will also use these data to determine part of hospital reimbursements beginning fiscal year 2013. CMS plans to add HAI indicators to this system annually.

The mechanism supported by the CDC for collection of data on HAIs is the National Healthcare Safety Network (NHSN), a secure web-based electronic data repository. NHSN enables healthcare facilities to collect and use HAI surveillance data. As of May 2012, CDC had enrolled over 9000 healthcare facilities in NHSN, and that number continues to rise. NHSN is being used by states with mandatory HAI reporting, those with voluntary HAI data submission policies, and also as the mechanism to submit HAI data to CMS.

US HHS Action Plan

In 2009, the US HHS unveiled the HHS Action Plan to Prevent Healthcare-associated Infections that established a set of five-year national prevention targets to reduce and possibly eliminate five specific HAIs. [2]

In late September 2010, The US HHS Steering Committee for the Prevention of Healthcare-Associated Infections hosted the meeting Progress Toward Eliminating Healthcare-Associated Infections. The purpose of the meeting was to review progress toward achieving the five-year targets in the HHS Action Plan to Prevent Healthcare-Associated Infections by increasing adherence to specific recommended prevention practices and reducing the incidence of specific HAIs.

A summary of the progress through September 2010 showed:

• Marked improvement in infection rates for CLABSI, healthcare-associated invasive methicillin-resistant *Staphylococcus aureus* (MRSA) infections, and SSIs. All of these improvements reflect timely progress toward the five-year targets

• Improvement in compliance with all five Surgical Care Improvement Project (SCIP) process measures to reduce the risk of SSIs

For other measures, such as healthcare facility-onset of *Clostridium difficile* infections (CDI), baseline data have been collected and are being analyzed. US HHS continues to build upon strategies for HAI prevention. A revised action plan to address HAI prevention in long-term care facilities was released for public comments in June 2012.

Healthy People 2020

Healthy People 2020 provides ten-year national objectives to improve the health of Americans. The objectives are developed using a multi-year process that includes input from a wide variety of individuals and organizations. HAI objectives were recently added to the Healthy People 2020 objectives. State programs are striving to meet the HAI objectives by 2020. The HAI objectives are to have a 75% reduction in CLABSIs and invasive MRSA infections.

Hospital Engagement Networks

Hospital Engagement Networks or HENs work at the regional, state, national or hospital system level to help identify solutions already working and disseminate them to other hospitals and providers. The CMS Partnership for Patients initiative awarded $218 million to 26 state, regional, national, or hospital system organizations to be Hospital Engagement Networks. HENs develop learning collaboratives for hospitals, provide a wide array of initiatives and activities to improve patient safety, conduct intensive training programs to help hospitals make patient care safer, and provide technical assistance to help hospitals achieve quality measurement goals.

Over 3,700 hospitals are currently operating within 26 HENs as part of the Partnership for Patients. The overall goal of the HEN is to reduce inpatient harm by 40 percent and readmissions by 20 percent, focusing on ten areas of improvement, including CAUTIs, CLABSIs, and SSIs.

Several HENs are active in Arkansas. Forty-seven hospitals are working through the Arkansas Hospital Association's (AHA) HEN, which is a part of a the largest HEN in the country, a 33-state HEN awarded by CMS to the Health Research & Educational Trust, an affiliate of the American Hospital Association. Other HENs active in the state include the Joint Commission Resources, Inc. HEN, the Premier HEN and the VHA, Inc. HEN.

Arkansas HAI Program and Prevention Efforts

Arkansas Healthcare-Associated Infections Program

In 2007, the 86th General Assembly of the State of Arkansas passed Act 845 of 2007, entitled *"An Act to Create the Health Facility Infection Disclosure Act of 2007; and for other purposes"*. This Act requests that healthcare facilities voluntarily submit quarterly reports to the ADH on their HAI rates for the following:

1. Coronary artery bypass surgical site infections;
2. Total hip or knee arthroplasty surgical site infections;
3. Knee arthroscopy surgical site infections;
4. Hernia repair surgical site infections; and
5. Central line associated bloodstream infections in an intensive care unit.

Since reporting was voluntary in accordance with this legislation, if a facility elected to submit quarterly reports, the first report was due no later than January 31, 2009 covering the period from October 1, 2008 through December 31, 2008. The ADH would subsequently publish an annual report summarizing data from healthcare facility quarterly reports using aggregate data.

Act 845 of 2007 also gave the Director of the ADH authority to appoint an advisory committee on HAIs. The purpose of this Advisory Committee is to assist the Director of the Health Department in the development of all aspects of the Department's methodology for collecting, analyzing and disclosing the data collected. This Advisory Committee was formed in November of 2007, consisting of subject matter experts and stakeholders. The Advisory Committee reviewed various surveillance mechanisms and voted to adopt the CDC's NHSN to collect and analyze data from healthcare facilities.

Implementation of Act 845 of 2007 was contingent upon appropriation and availability of funding for the Department of Health. Since no funds were specifically appropriated to support the activities of Act 845, due dates for many of the specified activities were extended until funds became available.

In September of 2009, the ADH was awarded funds under the American Reinvestment and Recovery Act (ARRA) in support of activities for Healthcare-Associated Infections – Building and Sustaining State Programs to Prevent Healthcare-Associated Infection, which is a supplement to CDC's Epidemiology and Laboratory Capacity for Infectious Diseases Cooperative Agreement (ELC).

CDC specified that these funds were to be used for funding of Activity A, with personnel as top priority. Activity A called for basic staffing and coordination to draft the State's HAI Prevention Plan and to establish the State's capacity to develop an HAI prevention program. Activity A also called for the creation of a multidisciplinary advisory group to provide program guidance.

The Advisory Committee already formed pursuant to Act 845 of 2007 now fills the role of the multidisciplinary advisory group that was identified in Activity A. The HAI Advisory Committee consists of representatives from the following organizational types: the ADH, a local children's hospital, the Veteran's Administration, a public hospital less than 50 beds and one that is greater than 50 beds, an outpatient surgery center, an academic institution, the AHA, the state quality improvement organization (Arkansas Foundation for Medical Care), and renal dialysis centers; a consumer and legal counsel are also included in the membership. Dr. Gary Wheeler from the Health Department co-chairs the Advisory Committee along with Dr. Terry Yamauchi from Arkansas Children's Hospital and UAMS. The co-chairs have established relationships with infection control professionals throughout Arkansas and are

familiar with the HAI issues in the state. The Advisory Committee met in November of 2009, April of 2010, September 2010, February 2011, April 2011, September 2011, January 2012, April 2012, October 2012 and January 2013.

In February 2010, the ADH HAI Program Director updated Arkansas State Senator Percy Malone, Chairman of the State Senate Committee on Public Health, Welfare and Labor, and Arkansas State Representative Gregg Reep, Chairman of the State House Committee on Public Health, Welfare and Labor, about ADH being awarded funds to support the state's HAI program and provided a report of program activities up to that time.

In 2011, the 88th General Assembly of the State of Arkansas passed Act 634 of 2011, entitled "*An Act To Require That Health Facilities Participating In The Centers For Medicare And Medicaid Services Hospital Inpatient Quality Reporting Program Make Certain Data On Infections Available To the Department of Health; And for Other Purposes*". Act 634 states that all facilities shall collect data on CLABSIs in an intensive care unit (ICU) with provisions for the Department of Health to add reporting of other categories. Also included in Act 634 is the requirement for all facilities participating in the CMS Hospital Inpatient Quality Reporting Program to authorize the ADH to have access to specific information that the healthcare facility submits to the NHSN, specifically the name of the health facility and any information submitted to the NHSN in order to satisfy the requirements of the Hospital Inpatient Quality Reporting Program. This legislation has enabled the state's reporting requirements to be in alignment with those of CMS and will allow for the expansion of state requirements as new infections are added by CMS.

In January 2011, the ADH was awarded funds under the ELC grant for continuation of the Activity A projects previously funded by the ARRA funding source. Also in January 2011 the acute care facilities in Arkansas began reporting CLABSIs in ICUs to the ADH through NHSN. In January 2012 this reporting was further expanded to include CAUTIs in ICUs and SSIs that occurred during colon surgery or abdominal hysterectomies. Additional HAI reporting requirements began in October 2012. Data will be available in the following year. The newest requirements include CLABSI and CAUTI reporting for ICUs and wards in long term acute care hospitals (LTAC) and CAUTI reporting from wards in rehabilitation facilities. In January of 2013, acute care facilities began reporting on MRSA LabID events, CDI Lab ID events, and healthcare worker influenza vaccinations. Additional HAI reporting requirements will be added in the future in accordance to the CMS quality reporting programs' requirements.

Healthcare-Associated Infection Prevention Efforts in Arkansas

In response to the HAI legislation, diverse HAI prevention efforts have been initiated within the state by various stakeholders. These stakeholders communicate and coordinate their statewide initiatives through the HAI Advisory Committee, which was created by the HAI legislation. The ADH is helping to catalyze, encourage, and coordinate the activities in the state by offering data, support, training, and resources.

The ADH has begun working collaboratively with the AHA, the Arkansas Foundation for Medical Care (AFMC), and the Association for Professionals in Infection Control and Epidemiology (APIC) chapter 46 with the goal of streamlining prevention efforts. The group strives to utilize the state's resources in the most cost-effective manner and works to avoid the creation of competing agendas or overlapping efforts. The group aims to minimize the reporting burden on facilities while maximizing the benefit received by trainings and prevention collaboratives. The group has chosen to designate the effort as "Target Zero". The "Target Zero" group has been moving forward on all new HAI prevention activities in a collaborative fashion.

Collaboration in the quality improvement arena also has grown over the past year with the formation of AR*best*Health, the Quality Program of the AHA. The Target Zero participants are a part of this broader group of stakeholders who share the goal of helping hospitals improve quality and patient safety across many points of care, including HAI reduction. HAI program staff serve on the AR*best*Health steering committee, the Care Advancement Allies, who help to align healthcare stakeholders and their work across the state. Other partners include AFMC, APIC, the Arkansas Association of Healthcare Quality, the ADH Office of Rural Health, CareLink, the Arkansas Pharmacists Association and the March of Dimes.

Appendix B

HAI Program Overview

FMQAI: ESRD Network 13

Introduction

FMQAI: ESRD Network 13 is an organization dedicated to assisting dialysis facilities and kidney transplant centers in their efforts to provide quality care for their patients with End Stage Renal Disease (ESRD). It is part of a nationwide system of 18 Networks contracted by the Centers for Medicare & Medicaid Services (CMS) under the ESRD Program, established as part of the Social Security Administration in 1972, to help assure that people receiving dialysis services or kidney transplants receive proper care. Our organization works with dialysis and kidney transplant centers and their patients in the states of Arkansas, Louisiana, and Oklahoma.

Quality Improvement Activity: "Partnership to Improve Infection Control Surveillance Reporting within the Dialysis Patient Population"

Background: Chronic hemodialysis patients are at high risk for a number of healthcare-associated infections (HAIs). These infections are often due to weaknesses in their immune system but can also be related to the actual process of hemodialysis, which requires frequent access to the vascular system. In an environment where multiple patients receive dialysis at the same time, there are opportunities for person-to-person transmission of infectious agents that can lead to an HAI. This can occur directly or indirectly through contaminated devices, equipment, and supplies, environmental surfaces, or the hands of healthcare personnel.

Reducing HAIs is a national priority and has received the attention of the Department of Health and Human Services (HHS) with their development of an HHS Action Plan to address HAIs. In the United States during 2008, there were about 37,000 central line-associated bloodstream infections (CLABSIs) in patients undergoing hemodialysis. Within the past 10 years alone, there have been more than 30 outbreaks of hepatitis B and hepatitis C in non-hospital healthcare settings, such as outpatient clinics, dialysis centers, and long-term care facilities. The reduction and ultimate elimination of HAIs, particularly bloodstream infections (BSIs), in dialysis settings requires a partnership between many stakeholders across the country. [1]

Available FMQAI: ESRD Network 13 data reflects that while improvements are noted, infection remains the second leading known cause of mortality, as seen in our CMS-2746 "ESRD Death Notifications Information," which is utilized for annual reporting. The following table reflects a five-year analysis of dialysis death by diagnoses for Network 13.

[1] CDC Collaborative on "Prevention of Blood-stream Infections in Chronic Dialysis Patients

ESRD Deaths by Diagnoses, Network 13 Annual Reports

	2008	2009	2010	2011	2012
Cardiac	47.9%	46.5%	46.4%	45.6%	40.7%
Infection	10.4%	10.2%	9.2%	9.7%	8.0%
Vascular	5.5%	5.3%	5.6%	5.6%	4.7%
Liver Disease	1.1%	0.9%	1.3%	1.0%	0.9%
Gastro-Intestinal	0.5%	0.5%	0.8%	0.9%	0.9%
Other	20.8%	13.7%	22.4%	22.0%	20.0%
Unknown	13.9%	13.7%	14.3%	15.2%	12.2%
Not Specified	-	-	-	-	12.6%

FMQAI: ESRD Network 13 quality improvement activities were subsequently developed to address the identified barriers of varying use of consistent definitions (i.e., positive vs. suspected, antimicrobial vs. antibacterial) and inconsistent infection control surveillance and reporting. The Network's efforts have focused on encouraging the use of a standardized reporting mechanism to ensure measurements reflect existing practices, which can then validate and/or improve existing processes within the dialysis facilities. HAI management impacts across several dimensions of dialysis care (e.g., vaccinations, catheter prevention and/or reduction, water quality, environmental, hand hygiene, and most importantly, bloodstream infections). The current Triple Aim of *Better care for individuals* , *Better care for populations*, and *Lower costs through improvement, for patients with Chronic Kidney Disease (CKD) and End Stage Renal Disease (ESRD), over time and across settings*, is why standardizing infection control surveillance reporting remains a priority.

QI Project: This ongoing QI project provides technical assistance on infection control surveillance reporting mechanisms, inclusive of standardized infection control event definitions, as directed by the Centers for Disease Control and Prevention (CDC) and their current collaborative on "Prevention of Bloodstream Infections in Outpatient Dialysis Patients" with the intent to validate reporting and subsequent surveillance to improve treatment as well as the prevention of HAIs.

All open and CMS-certified ESRD dialysis providers (282) in the Network 13 area as of June 24, 2013, were selected for this project; 62 dialysis facilities were located in Arkansas. The goal was to establish standardized (CDC-defined) infection control surveillance reporting across our three-state service area with the intent to incorporate standardized defined surveillance mechanisms into existing dialysis facility-specific Quality Assessment and Performance Improvement (QAPI) activities. The performance of the survey tool and technical assistance is part of the CDC/National Healthcare Safety Network (NHSN) activities being directed by HHS in their national efforts to address the issue of HAIs. Network-specific intervention educated providers regarding existing dialysis event reporting as guided by CDC/NHSN event reporting to reliably determine infection control surveillance within an existing facility's systems and/or structures.

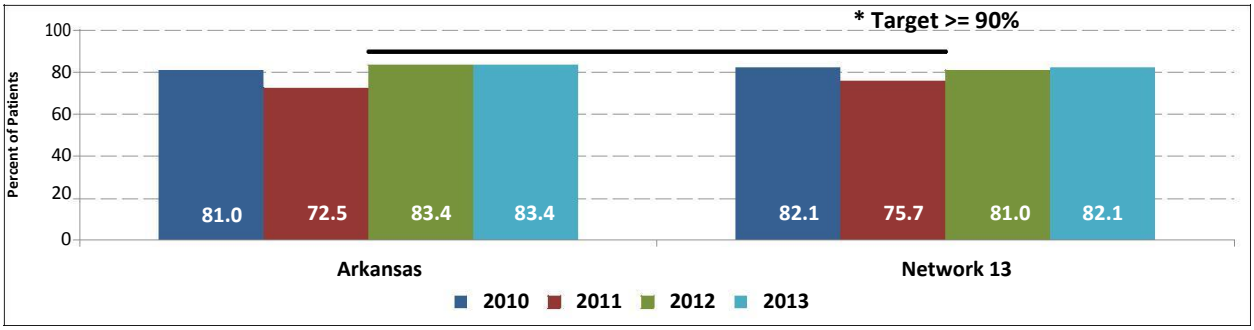
Interventions:

- Provision of technical assistance on NHSN/CDC tools (e.g., practices survey, dialysis event with specific instructions on definitions, and denominators) was accomplished via WebEx or one-on-one sessions.
- As use of the standardized reporting mechanism has improved across the service area, analysis was performed on the annual survey to identify trends, problems, and opportunities to improve as available and as applicable. The standardized data reporting was also used by the Network to monitor changes in practice (i.e., dialysis facility operations, staffing, patient/staff vaccinations, medication administration, etc.) and to monitor changes in specific infections (e.g., HBV, VRE, MRSA) as possible.
- Overall analysis and facility-specific profiles were generated and distributed to all participating dialysis facilities for review by their interdisciplinary dialysis team members and for use in their ongoing QI activities and infection control oversight.
- Provision of educational staff resources to enhance infection control surveillance reporting was accomplished through a combination of mailing hard copy information and/or CDs, distributing an electronic professional newsletter titled, "e-NYCU," and using the Network website: http://www.network13.org/. Examples of the provider/system resources provided are listed as follows:
  - Infection control tracking tools for surveillance/monitoring;
  - CDC links for HAI materials;
  - Voluntary participation in the CDC/NHSN "Prevention of Blood-stream Infections in Chronic Dialysis Patients" collaboration; and
  - Sample QI work plan: "Improving Infection control surveillance."
- Provision of educational patient resources to the dialysis units for use in educating their patients was accomplished. Our patient newsletter has supplied available infection control information/links and is provided to patients at their facilities. Examples of patient resources provided are listed as follows:
  - Posters for waiting areas;
  - CDC patient stickers (via providers);
  - Infection control fact sheet information via patient newsletter (provided to dialysis facilities for internal patient distribution); and
  - Applicable infection control information posted to patient page on Network website.

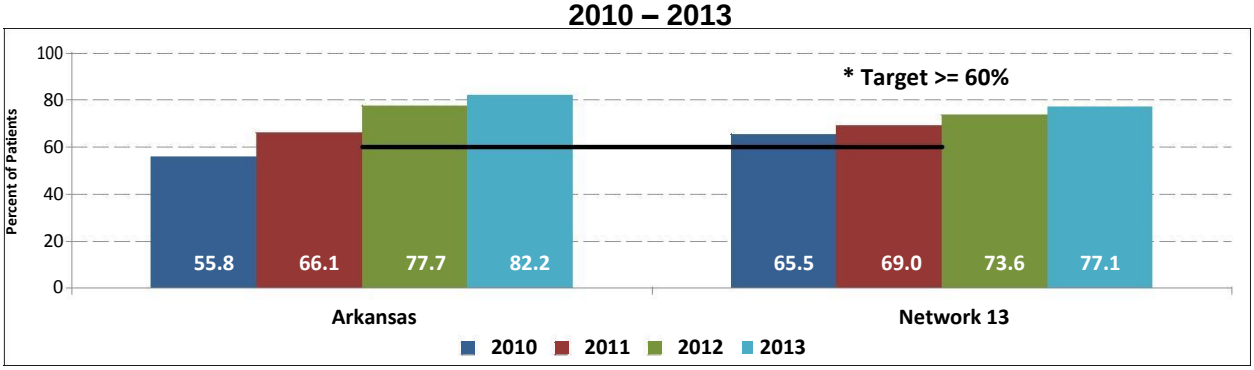
FMQAI: ESRD Network 13 is pleased to report that through our activities, 62 dialysis facilities in Arkansas are now successfully registered in the NHSN and initiated monthly dialysis event reporting at the end of 2013. Vaccinations are a part of this activity; therefore, we will continue to work with our Arkansas dialysis providers towards achieving the suggested rates for recommended vaccinations for the ESRD patients and staff. Comparative vaccination rates for dialysis providers are provided here for reference by the infection control community.

Immunization Rates for Dialysis Patients in Arkansas and Network 13

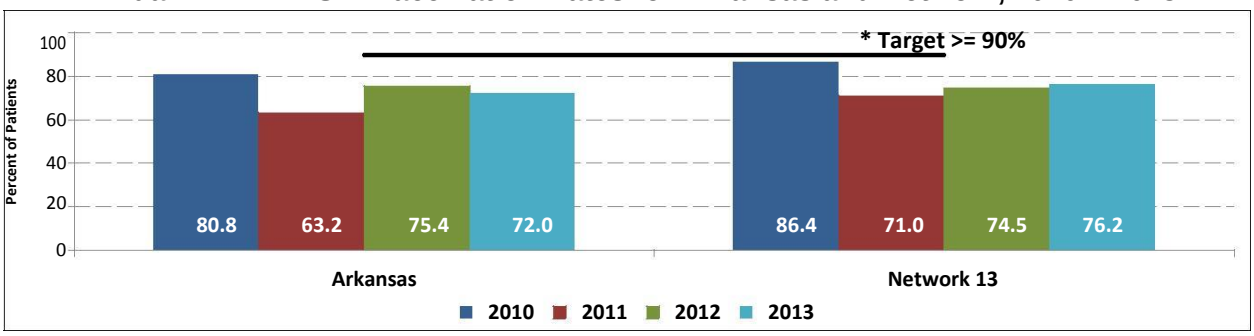
Annual INFLUENZA Vaccination Rates for Arkansas and Network, 2010 – 2013



Annual PNEUMOCOCCAL PNEUMONIA Vaccination Rates for Arkansas and Network 2010 – 2013



Annual HEPATITIS B Vaccination Rates for Arkansas and Network, 2010 – 2013



*Network 13 Immunization Performance Targets are based on National Immunizations Guidelines, Healthy People 2020

Dialysis Patient Census Counts

	AR	NW13
Patients as of March 2010	**3,413**	**15,544**
Patients as of March 2011	**3,532**	**15,940**
Patients as of January 2012	**3,665**	**16,642**
Patients as of January 2013	**3,755**	**17,077**

Data Source: NHSN Patient Safety Component - Outpatient Dialysis Center Practices Survey

This material was prepared by FMQAI: ESRD Network 13, under contract with the Centers for Medicare & Medicaid Services (CMS), and agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. Pub Number: OK-ESRD-NW13-2014131A02-3-199

Appendix D

HAI Legislative Report

APIC Arkansas Chapter 46

Association for Professionals in Infection Control and Epidemiology (APIC)

The Association for Professionals in Infection Control and Epidemiology (APIC) is the leading professional association for infection preventionists (IPs) with more than 14,000 members. Our mission is to create a safer world through the prevention of infection. This is achieved by the provision of better care to promote better health at a lower cost.

Most APIC members are nurses, physicians, public health professionals, epidemiologists, or medical technologists who:

- Collect, analyze, and interpret health data in order to track infection trends, plan appropriate interventions, measure success, and report relevant data to public health agencies.
- Establish scientifically based infection prevention practices and collaborate with the healthcare team to assure implementation.
- Work to prevent healthcare-associated infections (HAIs) in healthcare facilities by isolating sources of infections and limiting their transmission.
- Educate healthcare personnel and the public about infectious diseases and how to limit their spread.

APIC Arkansas Chapter 46

Our Mission: **APIC Arkansas strives to be a knowledgeable resource to the people of Arkansas. Our goal is to promote excellence in the principles and practice of infection prevention in health-care facilities and the community through education, communication, networking and public awareness.**

APIC Arkansas Involvement in Preventing HAI's

February 11, 2014

HAI Advisory Committee:

- APIC Board members serve on this committee

Networking with APIC Arkansas Chapter 46 Membership

- Communication to membership via email
- Discussions at Chapter Education Meetings
- APIC Arkansas Chapter 46 Website (www.apicarkansas.org)

Education:

- Promote regional and statewide educational conferences for Infection Preventionists (IPs)
    - HAI Program Coordinator/Epidemiologist invited to speak at Chapter Education meetings
    - Speakers address HAI prevention across the continuum of care

Competency of Infection Prevention Professionals:

- Developed a mentoring program for IPs
- Promote certification of IPs by APIC/Certification Board of Infection Control & Epidemiology, Inc (CBIC)
- Provided financial reimbursement to assist IPs to attend conferences

Carole Yeung, RN CIC, APIC Arkansas President